

the mutation rates of induced mutations, and a comparison of these data with those concerning mutable genes in a strict sense shows that the spectrum of mutation rates has still large gaps. Ordinary mutation rates of single genes so far known are in the order of 10^{-6} or smaller; mutable genes have mutation rates of 10^{-2} or more, while cases in between these extremes are almost unknown; if they occurred with any frequency they would stand every chance of being discovered soon. One is left with the puzzling question whether "ordinary" gene mutations and mutable genes really belong to the same category, and if so why there is this mysterious gap. Dr. Stubbe's survey serves to remind us of the extent of the field that still remains unexplored.

H. G. HILL.

SEX

Terman, Lewis M., and Miles, Catharine Cox. *Sex and Personality*. London, 1936. McGraw-Hill Publishing Co. Ltd. Pp. xi+600. Price 25s.

THESE remarkable studies in masculinity and femininity make a primary and fundamental contribution to the more exact knowledge and understanding of the complicated behaviour of the complicated mammal, man. They will compel the studious interest of the experimental psychologist, and arrest the attention of the social biologist. Nor can the physiologist remain for long unaware of the significant contribution to the problem of behaviour analysis which this volume provides. For the authors have developed a test which becomes a valuable instrument of research in the joint investigations which both physiologists and psychologists must undertake in those portions of their own fields of inquiry which are beginning increasingly to overlap. Moreover, the instructive studies on homosexuality indicate that in the near future the clinical investigator may have to hand an additional diagnostic and therapeutic measure.

It has long been recognized that the patterns of male and female behaviour in our own society cannot be rigidly defined, have

no universal validity and may, indeed, often be completely reversed in other societies, as Margaret Mead has shown in her studies of sex and temperament among primitive peoples. There has hitherto been no acceptable technique for comparing and measuring these behaviour patterns quantitatively.

As a result of very comprehensive investigations extending over a period of eleven years, Terman and Miles (with the aid of a team of co-workers) have established a test consisting of seven sub-tests which taken together should convert many alleged sex differences into experimentally established differences. On the basis of the scores obtained by 4,000 individuals with this test a masculinity-femininity scale (the M-F scale) has been established. The seven sub-tests measure not physical but mental sex differences. They are all pencil-paper tests of the questionnaire type and are given as a group test which takes forty to fifty minutes. The scoring is so arranged that each masculine response gains +1 and each feminine response gains -1 marks. The positive or the negative sign which precedes a subject's score indicates whether the score falls within the masculine or the feminine range. The size of the score itself indicates the amount of mental masculinity or femininity. The nature of the tests is indicated by the following titles: 1. Word association. 2. Ink blot association. 3. Information. 4. Emotional and ethical attitudes. 5. Interests. 6. Opinions. 7. Introvertive response.

Apart from the complicated aetiological factors involved in establishing differences in human sex behaviour, the M-F test does constitute an empirically reliable and quantitative gauge of differences in behaviour as they actually happen under specified conditions. It is this property of the tests which gives them such importance. The reservations with which the individual sub-tests must be used and the precise instructions for using the whole battery of tests are clearly indicated in the text of the book.

On the M-F scale normal male adults in the general population range from +200 to -100 with a mean of +52 (S.D. of 50). Normal female adults range from +100 to

—200 with a mean of —70 (S.D. of 47). This opens up the entertaining speculation that women may be more womanly than men are manly.

The normal scores are influenced to a very large extent by such factors as age, occupation, intelligence, education, interests and social background. Some of the most startling facts emerge from the studies of the influence of occupation. Here the scores fit the groups with almost unbelievable appropriateness. The American college athlete or engineering student rates as a real "he-man," a numerical and experimental confirmation of a firmly entrenched popular conviction.

In the list below are given the approximate scores for a variety of groups. The feminizing influence of age after adolescence has been reached emerges as a very interesting phenomenon.

College Athletes	...	...	...	...	+90
College Engineers	...	...	...	...	+81
Lawyers	...	...	...	...	+59
Physicians and Surgeons	...	...	...	...	+45
Police and Firemen	...	...	...	...	+29
Journalists	...	...	...	...	+27
Who's Who Men	...	...	...	...	+32
Husbands of Who's Who Women	...	...	...	...	+25
20-year-old Males	...	...	...	...	+58
30-year-old Males	...	...	...	...	+50
40-year-old Males	...	...	...	...	+40
50-year-old Males	...	...	...	...	+26
60-year-old Males	...	...	...	...	+10
70-year-old Males	...	...	...	...	+3
Clergymen	...	...	...	...	+12
Artists	...	...	...	...	+8
Male Inverts	...	...	...	...	-20
Superior Female Athletes	...	...	...	...	-14
M.D. or Ph. Females	...	...	...	...	-33
Who's Who Women	...	...	...	...	-45
Who's Who Men's Wives	...	...	...	...	-71
Teachers	...	...	...	...	-70
Housewives	...	...	...	...	-82
Dressmakers	...	...	...	...	-90
Domestic Employees	...	...	...	...	-100
20-year-old Females	...	...	...	...	-75
40-year-old Females	...	...	...	...	-79
60-year-old Females	...	...	...	...	-89

Terman and Miles have raised a multitude of new experimental issues. They have paved the way to a clearer attack upon the important nature-nurture problem. The possibility of fascinating quantitative endocrinological studies of the output of male and

female sex hormones in the urine of the groups indicated above may provide biochemical correlations of the utmost importance. Last but not least, remains the very important task of constructing, if necessary, modified tests for use in other countries.

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DELINQUENCY

Sullenger, T. Earl, Ph.D. *Social Determinants in Juvenile Delinquency.* John Wiley & Sons Inc., New York. London, 1936. Chapman & Hall Ltd. Pp. 385. Price 17s. 6d.

THE author considers that juvenile delinquency is due almost invariably to some phase or phases of adult insufficiency growing out of human relations in the primary groups—the family, the play-group, and the neighbourhood or the community—and the larger realms of social control, and that youth reflects the culture of these groups. He points out what he believes to be some of the main social determinants of juvenile delinquency as they appear in these groups and suggests possible preventive measures.

Of the three primary groups the author considers the family is without question the most important, as within this group the child conceives his initial attitudes to the other groups, becomes conditioned in his reactions towards school and church, and formulates opinions concerning the community.

Dr. Sullenger discusses the evolution of the gang-group out of the play-group and how it may advance along constructive and socially useful lines and take the form of a club, or become a destructive and specialized delinquent group carrying out various forms of anti-social conduct as individuals and as a group. He emphasizes the important fact that increased suggestibility in the gang-group leads boys to commit crimes which they would shrink from when alone, and he considers that the greatest determinant in delinquency outside the home is the lack of properly directed recreation.

The immigrant groups in the United States of America add to the complexity